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FOREST PLANTING LEAFLET.

LOBLOLLY PINE (Pinus taeda).

LOCAL NAMES.

Loblolly pine is the largest and most rapid-growing pine indigenous to the southeastern part of the United States, and one of the most desirable trees for planting in that region.

On account of the many different conditions under which it grows, and the consequent differences in form, bark, grain of the wood, and the proportion of sapwood, it not only has many local names, but the different forms frequently pass under different names in the same locality. The names most commonly given to it are *longleaf pine*, used in eastern Virginia and in other places where the tree is associated with pines having short needles; *shortleaf pine*, applied when associated with longleaf pine; *swamp pine* and *slash pine*, used to designate the place of growth, the latter name restricted to the largest trees; *old-field pine*, indicating the place of growth; *sap pine* and *blackbark pine*, applied to second-growth trees. *Loblolly pine* is a name which originated in Mississippi and Louisiana, and which designates the place of growth, loblolly being the local name for a thicket swamp. Its lumber along the Atlantic coast is generally marketed under the trade name of "North Carolina pine."

FORM AND SIZE OF TREES GROWN IN PLANTATIONS.

There are no old plantations, but the trees will have about the same rate of growth in plantations as in the old-field stands and produce the same quality of wood. The usual range of size of second-growth and old-field trees at 45 years of age is from 65 to 90 feet in height and from 14 to 24 inches in diameter, and trees in plantations can be expected to attain these proportions. In young trees the stem continues through the crown without dividing, but as the tree grows older the trunk usually divides into massive, spreading branches, which form the upper part of the oval thin-foliaged crown. Mature trees grown in old-field stands are characterized by slightly tapering trunks which are destitute of branches for two-thirds of the height of the tree. The bark of rapid-growing young trees is very dark brown and furrowed; that of older trees is red-brown, broken into rectangular plates, which are from 2 to 3 inches thick near the ground, but much thinner above.

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PLANTING RANGE.

The natural range of loblolly pine is largely restricted to the coastal plain region of the Southern States. It is suitable for planting from southern New Jersey through the coastal plain and Piedmont plateau region to western Tennessee, southeastern Kansas, and eastern Oklahoma, and as far west as the line of the ninety-sixth meridian in Texas. It is not advisable to plant this species above an altitude of 1,200 feet.

SOIL REQUIREMENTS.

Loblolly pine adapts itself to both wet and dry soils. It is not exacting in regard to texture, and grows well on coarse sands and compact clays. Its best growth, however, is made on moist, sandy soils.

GROWTH IN PLANTATIONS.

The rate of growth of loblolly pine in plantations will vary with the soil and drainage, but on soils of good quality it is one of the most rapid-growing trees, especially in its youth. Dominant trees frequently make annual height growths of 3 feet for several years during the first and second decades of life; and the annual diameter increase may amount to one-half inch during the same period.

The larger trees in stands in old fields on good soil have about the height, diameter, and yield shown in the following table:

Height, diameter, and yields of larger trees in old fields.

Age.	Approximate height.	Approximate diameter.	Volume in board feet.	Volume in cubic feet (including bark).
Years.	*Feet.*	*Inches.*	*Board feet.*	*Cubic feet.*
20	50	6	....	4
30	70	8	22	15
40	80	11	70	28

Plantations on good soils should yield as heavily as old-field stands. On very sandy soils or heavy red clays, or in very swampy or very dry situations, the growth would be slower and the yield lower than that given in the table.

VALUE OF WOOD GROWN IN PLANTATIONS.

The wood of loblolly pine grown in plantations will be of the same quality and suitable for the same uses as that grown in old-field stands. It is coarse-grained, knotty, and largely sapwood. Heartwood seldom forms in trees less than 1 foot in diameter. It is only moderately resinous and holds paint well. The thick sapwood is fairly uniform in color, and, when free from knots, is desirable for interior woodwork of all kinds. The knotty lumber is used for framing, railroad ties, car stock, boxes, and slack cooperage stock.

It decays rapidly in contact with the soil, but can be easily and cheaply made much more durable by impregnation with antiseptic materials.

PLANTATIONS.

Plantations can be started either from nursery-grown stock or by direct seeding, the desirability of the method depending upon the character of the land. The use of seedlings is recommended only on land which is very foul, in which case planting will probably be more successful than direct sowing. If a large number of plants are to be used, it is cheaper to raise them, but if only a few hundred are needed they probably can be purchased as cheaply from a dealer. Stock, if purchased, should be secured a week or more before planting time, and should be inspected at once to ascertain if it has become heated. The roots should be puddled by dipping in thick mud, and the trees temporarily heeled in by planting in a shady place in a trench, one side of which slopes so that the tops of the trees lie toward the south.

For raising seedlings the seed can be purchased or collected. A pound contains about 20,000 seed, enough to plant 300 feet of drill. About 30 per cent of fresh seed will germinate; the percentage is smaller for old seed. Seed should be planted early in the spring before the earth gets warm; in the extreme South, if the seed bed is protected from mice, the planting may be done early in the autumn. Seed beds should be on loose, loamy, moist soil. The beds should be about 10 feet long and 4 feet wide, and the drills 8 inches apart to give room for weeding. Seed should be covered about one-half inch with fine earth, which should be lightly rolled or "firmed." The bed may be liberally watered before the seed germinates, but young plants should not be excessively watered for several weeks on account of the danger of damping off. A partial shade of slats 18 inches above the bed is desirable during the first summer, particularly on dry soils. Most of the seed will germinate in two or three weeks, but some of the autumn-planted seed will lie over until the following spring. Seedlings are subject to few diseases.

Seeds should be collected as soon as the cones are ripe, in September or October. The maturity of the cones can be determined by cutting into several of them to ascertain if the seed is firm. Cones should then be gathered and dried either in the sun or in kilns at a low temperature. The heat causes them to open, upon which the seed will fall out or can be shaken out. Seed can be stored through the winter in a dry, cool place.

One-year-old seedlings, which should be from 6 to 12 inches high, are large enough to plant; or if the seed is planted in the autumn the second spring will be the time for the permanent planting. Seed for direct planting and for the seed bed should be coated with a thick mixture of red lead and water if birds or mice are likely to be troublesome. One-year-old plants can be grown for less than $1 a thousand.

Planting.—Seedlings should be planted in the permanent site during March or the first part of April, earlier in the South than farther north. The roots must be carefully protected from the sun and wind during planting, since the plants die if the roots become at all dry. A spacing of 6 by 6 feet is usually recommended, but on fertile soil 7 by 7 feet may be used. A plantation requires no cultivation. On account of the rapid growth of loblolly pine, hardwoods can not be planted profitably with it. The cost of planting should be about $4 a thousand, or $4.80 an acre, if a spacing of 6 by 6 feet is used.

Direct seeding.—On ground prepared by harrowing, direct seeding can be done by broadcasting from 2 to 3 pounds of seed per acre and harrowing it in. The cost of such seeding will vary from $6 to $8.50 an acre, according to the price of seed. Grassy land can be harrowed until the mineral soil is well exposed and then planted by broadcasting and the seed covered by reharrowing. Sowing and broadcasting without preparing the soil or covering is not successful. Seed-spot planting can be made on unprepared ground and is cheaper, and probably equally as successful as broadcast sowing. In seed-spot planting the soil should be loosened over an area 6 or 8 inches square, and 10 or 15 seeds planted and covered not deeper than one-half inch. Seed spots should be spaced 6 by 6 feet. When the seedlings are 1 year old it is often desirable to pull up all except one of the largest plants from each spot.

Care of plantation.—It is not best to prune live branches, but dead branches should be removed when possible by breaking them off close to the trunk. When a stand is 15 or 20 years old it can be thinned of the smaller, the crooked, and the forked trees if the wood removed in the thinning can be used, and light thinnings can be repeated afterwards at intervals of five years or more. On account of the danger of insect depredations, such thinnings should be made in the winter, since insects breed most abundantly in the wood of trees cut in the spring and summer and spread to live trees. Any tree infected by insects should be removed at once.

For ten or twelve years fire must be kept out of the stands. Older stands are seldom damaged by winter fires, but early spring fires, fed by a large amount of dry undergrowth, may be very destructive.

Approved.

W. M. HAYS,
Acting Secretary of Agriculture.

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